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INDIVIDUALIZED INSTRUCTION IN COLLEGES OF AGRICULTURE^{1/}

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Contents

	Page
The teaching function.....	4
Experiments and changes now going on.....	4
Tests and other devices used with freshmen.....	5
Honors courses.....	5
Comprehensive examinations.....	6
Use of tutors or preceptors.....	7
Sectioning of agricultural students:	
On the basis of ability.....	8
On the basis of previous training.....	8
On the basis of interest in certain subjects.....	8
Free reading period.....	8
Permitting superior students to gain college credit by special examination without taking the course in class.....	9
A how-to-study course.....	10
Cooperation between the departments of English and agriculture for improvement of the student's English.....	11
Preentrance advising for freshmen.....	11
Summary.....	12

Two important procedures are involved in any functional program for individualized instruction. These are: (1) Educational and vocational guidance to determine and direct individual differences; (2) adjustments or changes in (a) curricular offerings and course content, and (b) instructional techniques to meet the ability, interest, and needs of individual students. This paper deals only with certain aspects of this topic, particularly with some of the more important instructional techniques now being used to meet individual differences. Time does not permit treatment of the entire problem.

While discussing individualized instruction among agricultural faculties I have taken the liberty to mention certain aspects of programs that are now operating along the same line in certain liberal-arts colleges, because some of these colleges appear to have gone much further in this direction than have most colleges of agriculture. With regard to programs for the individualization of education in liberal-arts colleges

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I have been guided by the Thirty-first Yearbook of the National Society for the Study of Education, Part II--Changes and Experiments in Liberal Arts Education, chapter 3. Data concerning individualized instruction in colleges of agriculture were obtained direct from deans of agricultural colleges of the 48 land-grant institutions through the questionnaire method. These data are supplemented by information obtained through personal interviews with administrative officers and teachers in 10 colleges and from bulletins and other printed material furnished by these institutions.

The first step for individualization of college education was taken when the elective system was installed in the latter part of the last century. The early history of our colleges discloses no visible effort to deal with problems of educational guidance as far as a choice of subjects was concerned. The requirements of the curriculum were fixed. No choice was given the student to select courses in line with his special interest, ability, and needs. In the fixed college curriculum therefore the individualization of the student's training was not in the offerings. Each student was given the same kind of intellectual menu in both quality and quantity that was given to every other student. The elective system was an attempt to improve this situation and it has accomplished a great deal. A choice of subjects in lieu of the old fixed curriculum was a radical departure from the traditional curricular offerings of colleges and universities of earlier days. Some educators feel that the elective system has been abused in allowing the student too much freedom in choosing his courses without adequate educational guidance. Regardless of this, however, the majority feel that the change from the old to the new has helped greatly to enrich the college curriculum. But in the opinion of many this has not been sufficient as the remedy in the direction of individualization that is essential to the best interest and welfare of the student.

Although programs for individualized college education, as now conceived, are recent, the idea had its advocates many years ago. As far back as 1899, President William Rainey Harper 2/ of the University of Chicago said:

"Individualism in education as distinguished from collectivism is the greatest contribution of the nineteenth century to the cause of college education. The work of the student has been in a large measure transformed as a result of a wide choice of subjects placed before him and by the freedom given him to make his own choice. But now in order that the freedom may not be abused and in order that the student may receive the assistance so essential to his highest success another step in the onward evolution will take place. This step will be the scientific study of the student himself."

2/ Harper, William R. The Scientific Study of the Student, in The Trend in Higher Education. Chicago, University of Chicago Press, 1905, pp. 317-326.

In a statement^{3/} made more than 20 years later by Ernest DeWitt Burton along a similar line he said:

"Mass education is ill-adapted to produce the highest type of personalities. It is better than none but it is far from being good enough. The touch of the individual teacher is the most potent educational force. If it is said that our colleges have not a staff adequate to supply such individual guidance, I answer if we are to do our work we shall have to find them. Better a few students well educated than many inadequately trained. We have passed through three periods in reference to the rigidity of our curriculum - that of wholly prescribed curriculum, all students taking the same studies; that of free electives, each student following his own more or less ignorant impulse; that of majors and minors and more or less rigidly formulated sequences. For the college student I believe our next experiment must be that of a sympathetically guided individualism.

It is obvious from the preceding statements that these two leaders in education did not regard the elective system as the cure for all the ills of our system of higher education of those periods. In recent years much time and effort have been used by administrative and personnel officers and faculty committees, particularly in certain institutions, in a more penetrating analysis of curricular offerings, methods of instruction, and personnel problems of a wide variety, to determine the best procedure to follow in adapting the college offerings to individual differences of students. There is today more constructive criticism than ever before within the walls of many of our leading institutions as to the measure of scholastic achievement now required in undergraduate work, which as a whole is regarded by many as entirely too low.

With the aim of improving both the quality of teaching and scholarship below the graduate level a number of new experiments and changes are being introduced in the way of curriculum adjustments and instructional techniques in many higher institutions. Some of these changes have become a permanent part of the program for the individualization of college education, and others are yet in the experimental stage.

To give a general view of trends for individualization of education, reference is made to A Survey of Curriculum Provisions for Individualizing Instruction, by George A. Works^{4/}, in which he said:

^{3/} Burton, E. DeW. The Business of a College, in Education in a Democratic World. Chicago, University of Chicago Press, 1927, pp. 57-66.

^{4/} Gray, W. S., ed. Provision for the Individual in College Education. Institute for Administrative Officers of Higher Institutions, Proceedings, v. 4, Chicago, University of Chicago Press, 1931, ch. 7, p. 71.

"Seventy-five institutions were reported as being involved in the 128 changes or experiments. Of these 75 colleges, 32 were making 50 adjustments in curricular or teaching procedure that were judged to contribute to the individualization of college education."

Dr. Works drew these two conclusions from his survey:

"(1) That the proportion of colleges that are in some organized form making adaptation of their work to individual differences of students is large, and (2) the proportion of the total changes that are being made center to a large degree in systematic efforts that look toward the individualization of college education."

The foregoing statements refer mainly to what is being done to individualize instruction in liberal-arts colleges rather than in agricultural colleges.

The Teaching Function

Of all the functions which an educational institution performs that of teaching is the one of most importance and should have first consideration. It is through the medium of teaching that workers for all other fields of endeavor are trained. Unquestionably the quality of instruction will determine largely the efficiency of workers in the other fields. Of all kinds of techniques for individualizing the student's program the individualization of teaching is therefore of first consideration. Strange as it may seem, however, plans for individualization have not originated generally from the teaching members of the college. With the exception of honors courses and perhaps a few other teaching techniques, attempts to adopt programs for individual differences have been made chiefly through the nonteaching members of the college staff, such as personnel and administrative officers, and the like. By and large, the individualization of college teaching appears to have been administrative both in origin and method. This means that a variety of personal problems and extra curricular interests of students have received more emphasis than curricular experiences of students. There are some exceptions to this statement, but in the main it is true. Thus, the tendency has been to identify individualization with activities other than subject-matter studies, and as a consequence the movement for individualization has not always had the full support of the teachers themselves. This is an unfortunate consequence because the teaching staff must assume responsibility for the program for individual differences if it is to function.

Experiments and Changes Now Going On

What are some of the more important experiments and changes now being introduced in higher institutions for individualization of education? Here are some of the more significant: Tests and other devices used with freshmen; honors courses; comprehensive examinations; use of

tutors or preceptors; sectioning of students on the basis of ability, classification, and placement; free reading period prior to the midterm and final examinations; permitting superior students to gain college credit by special examination without taking the course in class; a How-to-Study course; cooperation between the agricultural and the English departments in the improvement of the students' English; and preentrance advising or advice to students before registration.

Tests and Other Devices Used With Freshmen.

The majority of higher institutions make use of some kind of test or other device as a means for selecting and guiding freshman students. Though it is not claimed that the results of tests and other records should be taken as the sole criterion in determining the student's possibilities, it is generally believed by those who have made use of those different devices, that they have value when properly interpreted and intelligently used. The National Society for the Study of Education reports 70 liberal-arts colleges that give tests to freshmen. Data obtained from the office of the deans of agricultural colleges show that agricultural students in 32 colleges are given intelligence tests; high-school records are used in 29 colleges, achievement tests in 23, interest-analysis blanks in 14, and personality blanks in 13. The remainder of these colleges failed to supply data on this question.

In many instances tests and such devices are handled at one central office, and this may account for the fact that only two-thirds of these colleges reported on this matter.

Honors Courses.

Of the newer devices for the individualization of education, honors courses are used most extensively. At least 100 institutions are making use of honors courses in some form. There is considerable difference in the various plans followed in the awarding of honors, either general or special. General honors are awarded in recognition of high grades in regular courses, whereas special-honors programs cover 2 or 3 years of study followed by a comprehensive examination and a thesis at the close. The advantage claimed for honors courses is that they provide opportunity for the student to do special work along the line of his special interest and ability, and that they encourage him to work to his fullest capacity rather than to be content merely with keeping up with the class. On the other hand, it is sometimes claimed that honors courses are narrow and limit the student's contact to a very small number of professors, and that they generally lead to specialization at an age too early for the best interest of the student. Another objection offered to honors courses is that a student candidate for honors in one department is apt to neglect his duties toward required courses in other departments. It is claimed that in order to supervise properly the work of candidates for honors, either additional teachers are needed or the teachers assuming this responsibility must do extra work.

Institutions generally limit the admission to honors courses to students of superior ability or to those who have demonstrated high scholastic attainment. Swarthmore College, a pioneer in developing the honors-course plan in this country, follows this procedure. At present about 40 percent of the upper classmen are enrolled in honors courses, which started with eight honors students in 1922. In stating the advantage of the honors program as conducted at Swarthmore, Brooks⁵ says:

"(a) The honors system has considerably lengthened the average day's work of honors students, (b) every honors student who expects distinction reads during vacations, (c) following the example of honors students, many of those not reading for honors read also during vacation, (d) the adoption of the honors plan has increased the number of students who go on with graduate study, and (e) an overwhelming majority of the honors graduates are strongly in favor of the honors plan."

At the University of Buffalo a plan of independent study called honors courses is followed by students of superior ability in the junior and senior years and, to a limited extent, by sophomores. Students who pursue honors courses at the University of Buffalo follow no set curriculum. A curriculum is made for them, but is based on their interest in that department of study in which they wish to specialize. Honors courses at the University of Buffalo have as their objective the development of the student's capacity to do independent work, and the university is reluctant to grant the degree of bachelor of arts to any student unable to demonstrate his capacity to do this.

In contrast to the 100 liberal-arts colleges which offer honors courses, nine agricultural divisions in the following States use this procedure. The States are Connecticut, Florida, Iowa, Maine, Massachusetts, Missouri, New Jersey, Washington, and Wyoming. About 20 other State-supported institutions offer honors courses to some extent, most of them being State universities that do not have divisions of agriculture.

According to President Aydelotte of Swarthmore College, honors courses require about 20 percent more instructors and consequently about 20 percent more expense. This fact may be a hindrance to many colleges that otherwise might wish to offer programs of this kind.

Comprehensive Examinations.

Properly defined comprehensive examinations are intended to be more inclusive than regular-course examinations, but as a matter of fact they do vary considerably in their degree of comprehensiveness. Such examinations sometimes cover the work of a single course with a designated amount of outside reading in addition, or they may include two or more courses.

5/ Brooks, Robert C. Reading for Honors at Swarthmore; a record of the first 5 years, 1922-27. 196 pp. New York, Oxford University Press, 1927.

Occasionally the comprehensive examination covers the whole of the student's major field. One purpose of the comprehensive examination is to integrate the student's work in a certain field. It is also intended to stimulate outside reading and the mastery of a subject rather than a group of courses. Another value claimed for comprehensive examinations is that they stimulate professors to unify their courses and to give more consideration to the relation of their courses to courses in other departments. Comprehensive examinations are closely allied with honors courses and the tutorial system and apparently have been more satisfactory in connection with a well organized tutorial system. In those institutions that have used comprehensive examinations the professors as a group seem satisfied with such examinations. By and large, comprehensive examinations have not become well established in a large number of higher institutions of learning. They are in use, however, at Harvard, Princeton, the University of Chicago, Rollins College, the University of Texas, Antioch College, and at a few other liberal-arts colleges--also at a few agricultural colleges. According to deans of agriculture, comprehensive examinations are used in seven agricultural colleges, and vary in extent from examinations for all candidates for degrees to those for students of certain divisions such as animal husbandry or dairying. In a few cases the comprehensive examination is used only for students with high averages who apply for graduation with honors.

Use of Tutors or Preceptors.

The use of tutors or preceptors as a device in the individualization of college teaching has made progress in recent years. In certain liberal-arts colleges such as Harvard, Princeton, Colgate, Syracuse, University of Buffalo, Wells, Franklin, Lawrence, and a few others, the tutorial plan is used. There are different ways in which tutors function. At Harvard the tutorial system, which was modeled after the Oxford plan, does not function in a single course but in a subject or group of subjects, and tutors give most, if not all, of their time to individual conferences with students, usually from 20 to 30 students being assigned to each tutor. At Princeton preceptors give supplementary instruction in individual courses. Syracuse University has a tutor-adviser system which is voluntary on the part of the tutor and the student. One difficulty in the use of tutors is that it takes time to develop a group of good tutors, and of course the plan involves either extra cost or extra work by the teacher. Though the tutorial system used by some colleges is obviously more expensive or at least may require a greater burden on the part of faculty members than the traditional method of instruction, some believe its use is not beyond the possibilities of most State-supported institutions.

The facts show that agricultural faculties have not made much use of the tutorial system of teaching. Four colleges stated that they make use of the plan, but on further investigation it is the opinion of the writer that the service rendered, usually by the head of the department as an adviser, could hardly be classified as tutorial work as it is generally understood.

Sectioning of Agricultural Students.

1. On the basis of ability

Sectioning of students on the basis of ability or achievement is practiced to a considerable extent in certain institutions. There have always been differences of opinion among college professors as to the value of grouping superior students and slow students in separate sections. It is the opinion of a considerable number of college staffs, however, that a certain amount of sectioning is desirable, especially in large sections of elementary courses. From all accounts the plan of sectioning students on the basis of ability has not been adopted on an extensive scale in colleges of agriculture. Ten agricultural colleges in the following States, however, reported that they section the students in certain courses: Connecticut, Indiana, Iowa, Louisiana, Missouri, Ohio, Oklahoma, Pennsylvania, Tennessee, and Wyoming. The subjects in which the sectioning is practiced are chemistry, English, botany, and zoology.

2. On the basis of previous training

Sectioning students on the basis of previous training is followed in a small group of agricultural colleges. This is done in Arizona, California, Connecticut, Iowa, Louisiana, Maryland, Michigan, Oklahoma, Utah, Wisconsin, and Wyoming. The courses in which sectioning is done are chemistry, physics, animal husbandry, farm crops, English, and mathematics.

3. On the basis of interest in certain subjects

Some members of agricultural faculties believe it to the advantage of agricultural students to be separated from other students in certain subjects - not directly on the basis of ability but on the basis of individual interest. Some claim that sectioning on the basis of the student's special interest has value in motivating the student's work. There are, of course, differences of opinion as to the merits of this procedure. Reliable information reveals that a little over half of the colleges of agriculture section agricultural students from other students in chemistry and botany. Exactly half section agricultural students from other students in English, and slightly more than a third section agricultural students from other students in economics.

Free Reading Period.

Not a great deal has been done in colleges and universities regarding a free reading period just before semester examinations to allow students to catch up on their assigned reading, although a few institutions have introduced this system. The free reading period generally means to shut down all regular courses and tutorial work for 2 or 3 weeks before the midyear and final examinations. During the period students are supposed to attend no classes but to give their entire time to private study. Five of the agricultural colleges reported that they use the free reading period, but in

their explanation of the plan, the fact was revealed that the period generally amounts to nothing more than the regular examination period of from 1 day or so prior to the examination to allow students to do such reading or reviewing as they may deem necessary.

Permitting Superior Students to Gain College Credit by Special Examination Without Taking the Course in Class.

Granting students the privilege of making college credit without taking the course in class, particularly in certain courses, is another way of making provision for individualization based on ability and achievement. This procedure, it is claimed, when wisely followed works to the advantage of the student in a saving of time and a possible repetition of what may have been learned hitherto. This privilege is not usually granted to any except the superior student. At the University of Chicago a student may present himself for an examination at any examination period regardless of whether he has taken all, any part, or none of the course in regular class work.

Commenting on the practice at the University of Chicago, Dr. Chauncey S. Boucher^{6/}, former dean of the College of Arts and Science said:

"We have found that some students either are prepared or can prepare themselves without instructional assistance for one or more examinations, others need only part of the regular work of a given course, while the majority need all of the class work offered."

He stated further:

"Approximately 25 percent of our freshmen this year have indicated that they plan to take one or more of the examinations without taking the respective course or courses offered to prepare students for examinations. We believe that this type of individualization of student programs is one most needed to bring home to each student the true meaning and significance of the educational process for him individually."

In discussing this plan further Dr. Boucher said:

"It changes almost completely the motivation of a majority of the students and it changes very significantly and quite wholesomely the relationship between student and instructor."

^{6/} Boucher, Chauncey S. Curriculum Provision for the Individual in the University of Chicago, in Provision for the Individual in College Education, edited by W. S. Gray. Institute for Administrative Officers of Higher Institutions, Proceedings, v. 4, Chicago, University of Chicago Press, 1931, ch. 9, p. 106.

The practice of allowing certain students to gain college credit without taking the course in class is followed to some extent in 25 of the agricultural colleges, but the plan is the exception rather than the rule and the privilege is granted to students only who have demonstrated high achievement in other courses.

A How-to-Study Course.

A considerable number of colleges and universities in recent years have experimented with a how-to-study course for weaker students or those who rank below the average of their high-school graduating class. Some college professors think that training in how to study, when properly handled, functions to the advantage of weaker students, and others minimize its value. Some experiments conducted in which two groups of students, one a controlled group and the other a trained group, were used show results in favor of the how-to-study course. Eckert and Jones^{7/} found that:

"The average grade of those who took the course was raised significantly, compared to the average grade of those coming from the same high-school levels previously. Particularly was there an improvement on the lower end of the scale. That is, the course tended to benefit the poorer students more than the average or mediocre students. Nearly all of the poorer students who had not had the course had in previous years dropped out of college voluntarily or had been dismissed. With this course of study the majority were able to survive through the freshman year, and many of them through the sophomore year. The proportion of those who made a C average grade (or nearer to C than D) rose from 25 percent to 48 percent whereas the percent failing completely dropped from 40 percent to 15 percent.

"There was a tendency for the How-to-Study group to benefit most in the drill subjects of mathematics, foreign languages, and English, and least of all in history."

Another experiment reported in the same bulletin^{7/} says:

"Pressey^{8/} at Ohio State University matched students who had taken a How-to-Study course on the basis of intelligence-test scores and time on probation. From the standpoint of persistence in college, the course showed very

^{7/} Eckert, Ruth E., and Jones, Edward S. Value of a How to Study Course for College Students. University of Buffalo Studies, v. 10, no. 2, 46 pp. June 1935.

^{8/} Pressey, L. W. C. Permanent Effects of Training in Methods of Study on College Success. School and Society, 28 (Sept. 29, 1928), pp. 403-404.

decided values, since in the trained group 58 percent were saved, whereas in a control group, 18 percent were saved. Moreover, the trained group showed 20 percent of its members as graduates, while not a single student in the control group completed his course. Pressey also showed that while training paid large dividends above the 25 percentile point in intelligence, it was nearly useless below this level."

Some attention is being given to programs of training for weaker students on how-to-study in colleges of agriculture. Twenty of these colleges said they offer training along this line. A more detailed analysis of the kind of courses showed, however, in some instances that the course is not a systematic course but a sort of training which is given during the freshman week through personal conferences.

Cooperation Between the Departments of English and Agriculture for Improvement of the Student's English.

The time was when agricultural teachers gave little, if any, attention to the quality of expression their students used in writing examination papers or other kinds of reports. The main point they kept in mind, according to the general practice, was that the student know the subject matter of the course. In this achievement the student had met his entire responsibility. Anything else was irrelevant. But in time there have been changes in this regard. In recent years there has been an increasing tendency for the agricultural department and the English department to follow the custom of cooperating more closely in the matter of checking up on students' English and methods of expression. This kind of service is one that the English professors render in addition to regular-course requirements. It is the practice in some institutions for the agricultural teacher to report to the English department the names of students whose work shows a poor quality of expression. Some agricultural college teachers submit papers written by students to the English department for observation and correction. Approximately one-half of the colleges of agriculture reported that they were working in cooperation with the English department for the purpose of checking and improving students' English.

Preentrance Advising for Freshmen.

Another important change which has been introduced at several institutions as a part of the program to provide for individual differences is the preentrance advising with prospective freshmen used at the University of Minnesota, the precollege testing at the University of Wisconsin, the precollege educational-guidance survey instituted at the University of Arkansas, Mills College in California has a preentrance advising system for freshmen; Rollins College, Winter Park, Fla., has developed a system of questionnaires designed to help in the selection of freshmen. Perhaps other institutions are following similar procedures. The first three of this group are mentioned especially because they happen to be land-grant institutions, and though this kind of work functions from the liberal-arts colleges of these institutions, the service no doubt applies in the selec-

tion of agricultural students as well as others. The question concerning preentrance advising was not included in the form used to learn what agricultural divisions are doing to develop programs for the individualization of instruction, hence I am not prepared to give a complete report on this practice.

Summary

In this paper I have indicated only a few of the better-known practices that have been introduced in higher institutions to meet individual differences of students. Current literature on the improvement of college teaching shows numerous changes and experiments that have been offered for the individualization of college teaching. Many of these new devices are functioning to the general satisfaction of their promoters. Others are yet more or less in the experimental stage. It is not to be expected that college faculties should accept without question all the newer devices that are suggested for the improvement of college teaching. After all, a knowledge of the subject and sincerity of purpose are attributes of a good teacher for which there is no substitute. Furthermore, there is no magic in pedagogical devices that will, from a combination of poor students and low-grade instructors, produce high-grade results.

In conclusion it would seem logical to raise this question, Would it be to the advantage of undergraduate students for faculties of agricultural divisions to organize their teaching to provide for individual differences on a basis similar to programs of this character now functioning in liberal-arts colleges? There would, of course, be differences of opinion as to the wisdom of this procedure, especially if such a program should be so elaborate as to incur extra cost to the institution. There is evidence to show that a broad program for the individualization of education does require additional personnel, which obviously would mean added cost for teaching. But it is my belief that certain phases of individualized instruction should not necessarily mean an additional financial burden to agricultural colleges. I have reference particularly to honors courses now offered in over 100 institutions; comprehensive examinations; adjustments in curricular content to individual ability; interest and needs; free reading periods before midterm and final examinations; various kinds of tests including high-school records of students; preentrance advising; a certain amount of sectioning of students on the basis of ability, interest, and previous training; conference discussion in lieu of the lecture plan; allowing superior students to graduate in less time than the traditional 4 years; and a how-to-study course for weaker students. Some agricultural divisions have already introduced some of these teaching techniques to provide for individual differences, but what has been done is mostly of a sporadic nature. Even so, some fruitful results have been achieved. It is my opinion therefore that agricultural faculties and administrative officers can well afford to make a more penetrating analysis of several of these newer devices with the object of testing their value as a means for the improvement of teaching and stimulation of the scholarship of undergraduate students.

Individualized Instruction in Colleges of Agriculture

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